

NAME \_\_\_\_\_

Module 10 Coordinate Geometry and Spatial Visualization  
Lesson 3 Coordinate Geometry

### Lesson Objectives

- Use coordinate geometry to explore the links between geometric and algebraic representations of problems (lengths of segments/distance between points, slope/perpendicular-parallel lines).
- Count the distance between two points on a horizontal or vertical line and compare the lengths of the paths on a grid.
- Find the distance between two points on a number line.
- Find the distance between two points on a number line and locate the midpoint.
- Find the distance between two points on a coordinate plane using the Pythagorean Theorem.

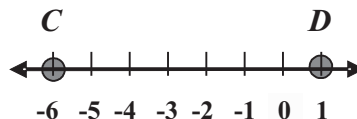
### Subtopic 1 Distances on a Coordinate Plane

The distance between two points with coordinates  $a$  and  $b$  on a \_\_\_\_\_ is  $|a - b|$ .

Midpoint

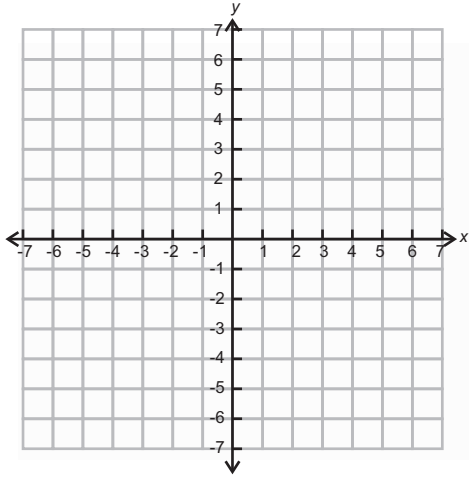
- Divides a line segment into two \_\_\_\_\_ line segments
- The coordinate of the midpoint of a segment whose endpoints are  $a$  and  $b$  is \_\_\_\_\_.

1. Find the distance between  $C$  and  $D$  and the coordinate of the midpoint of  $\overline{CD}$ .



2

Find the distance between  $(-4, -6)$  and  $(1, 6)$ .



**Subtopic 2**

**Slope**

Slope is a measure of the \_\_\_\_\_ of a line.

The \_\_\_\_\_ of a line equals rise divided by run.

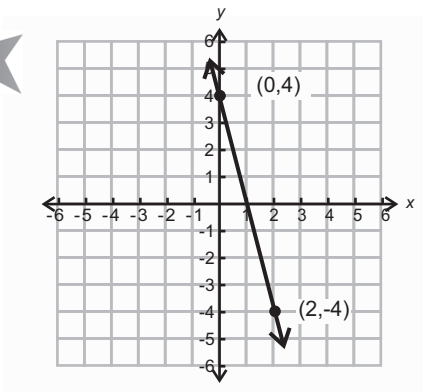
Slope = \_\_\_\_\_

The slope of a horizontal line is always \_\_\_\_\_.

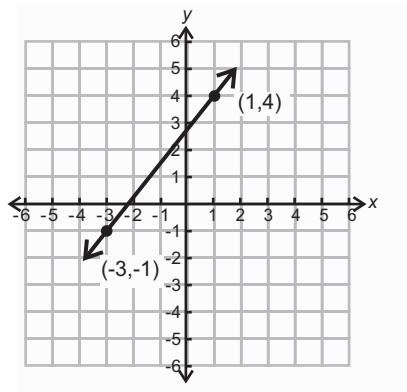
The slope of a \_\_\_\_\_ line is always undefined.

**Find the slope of the line.**

3



4



### Subtopic 3 Parallel and Perpendicular Lines

Parallel lines are coplanar lines that never \_\_\_\_\_.

Perpendicular lines are coplanar lines that intersect at a \_\_\_\_\_.

Nonvertical parallel lines have \_\_\_\_\_ slopes.

Except for horizontal and vertical lines, \_\_\_\_\_ lines have opposite reciprocal slopes.

\_\_\_\_\_ numbers are the same distance from 0 but in opposite directions.

Two numbers are reciprocals if their \_\_\_\_\_ is 1.



Find the slope of any line parallel to line  $t$  and the slope of any line perpendicular to line  $t$ .

